

NON-PUBLIC?: N
ACCESSION #: 9301150192
LICENSEE EVENT REPORT (LER)

FACILITY NAME: SEABROOK STATION PAGE: 1 OF 03

DOCKET NUMBER: 05000443

TITLE: MANUAL REACTOR TRIP DUE TO UNAVAILABILITY OF TWO
CIRCULATING WATER SYSTEM PUMPS
EVENT DATE: 12/13/92 LER #: 92-025-00 REPORT DATE: 01/12/93

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
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COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On December 13, 1992, at 0646, a manual reactor trip was initiated from full-power due to the trip of two out of the three Circulating Water System (CW) pumps. The CW pumps, which provide cooling water flow from the Atlantic Ocean to the condensers, tripped due to a higher than normal differential water level across the traveling screens located upstream of the pumps' suction. The high differential water level was caused by debris (primarily seaweed) brought into the CW intake during a storm which began on December 11, 1992. Debris that enters the CW System is removed by traveling screens. During this event the traveling screens tripped on thermal overload allowing debris to increase the differential water level and to trip the CW pumps.

There were no adverse safety consequences as a result of this event. All plant systems functioned as designed in response to the trip and Control

Room personnel correctly performed appropriate recovery actions.

The root cause for this event was determined to be tripping of the traveling screens on thermal overload as a result of the traveling screens rapidly cycling between fast and slow speeds.

Corrective actions included installing a Temporary Modification to allow for continuous manual operation of the screens at either slow or fast speed. This eliminated the potential for the aforementioned cycling between fast and slow speed, and hence, the potential for tripping on thermal overload. Additionally, procedure ON1017.02, "Circulating Water Screen Wash Operation," was also reviewed and revised to reflect the Temporary Modification.

END OF ABSTRACT

TEXT PAGE 2 OF 03

Description of Event

On December 13, 1992, at 0646, a manual reactor trip was initiated from full-power due to the trip of two out of the three Circulating Water System (CW) pumps KE!, which provide cooling water flow from the Atlantic Ocean to the condensers SG!. The following describes the initiating conditions and background information pertaining to this event.

Seabrook Station utilizes three traveling screens KE!, one for each CW System pump bay, to prevent fish and other debris from entering the CW System. The screens can travel forward at 20 fpm (high speed) or 5 fpm (low speed). Debris is collected on the upstream side of the traveling screen and is carried upward as the screen rotates. The debris is subsequently flushed out by high velocity jets of water from the screen wash nozzles, and is deposited into a trash trough. At Seabrook Station debris is generally so slight that the traveling screens are only operated once per week for equipment readiness. While not in use, the screen control switch is placed in the "off" position.

On Friday, December 11, 1992, during a storm, Main Control Board alarms were received from the traveling screens. These alarms indicate differential water levels of 4 inches and then 18 inches on any traveling screen, and hence, that the screens need to be cleaned. Since the screen control switches were in the "off" position, this required local manual operation of the screens in accordance with procedure ON1017.02, "Circulating Water Screen Wash Operation." Periodic washing of the screens was required throughout the weekend and continued into Sunday, December 13,

1992. On a number of occasions during the weekend the screens had to be stopped due to the inability to keep up with the debris removal from the fish pit collection basket.

During the screen washing activities, the controller was in the "run" position. In this position, the screen speed is 5 fpm unless the screen differential level exceeds 12 inches, where the speed is automatically increased to 20 fpm. Similarly, when the screen differential level returns to less than 12 inches, the screen speed changes back to 5 fpm. Just prior to this event the screen speed was observed to be rapidly cycling (e.g., once per second) between these two speed ranges. Subsequently, the C traveling screen tripped, As a result, the differential level in this bay exceeded the CW pump trip setpoint of 60 inches, and the C CW pump tripped.

Immediately following this, the Control Room initiated a power reduction. Seconds later, the B CW pump tripped, and Control Room personnel tripped the reactor. CW pump A also subsequently tripped.

The plant response to the trip was normal and no unexpected transients were observed. Decay heat was rejected to the atmosphere via three Atmospheric Steam Dump Valves (ASDV) JI! since the turbine bypass valves JI! to the condenser were not available due to loss of circulating water. Main steam safety valves did not lift during this event. Emergency feedwater BA! initiated due to low Steam Generator narrow range level and a feedwater isolation signal was initiated per design when Tavg reached its low setpoint. These latter two conditions are normal in response to a reactor trip.

At 0722 on December 13, 1992, a four-hour NRC notification was made pursuant to 10 CFR 50.72(b)(2)(ii) for the Reactor Protection System actuation and Emergency Safety Features actuation (i.e., Emergency Feedwater actuation and Feedwater Isolation).

TEXT PAGE 3 OF 03

Safety Consequences

There were no adverse safety consequences as a result of this event. Within approximately 10 seconds of the trip of the second CW pump, Control Room personnel tripped the reactor and decay heat was rejected to the atmosphere via the ASDVs. All plant systems functioned as designed in response to the trip and Control Room personnel correctly performed appropriate recovery actions. Based on this, at no time during this event was there any impact on the health and safety of plant employees or the public.

During this storm the safety related Service Water System was switched to the Cooling Tower. As a result, this storm did not adversely affect the Service Water System.

Root Cause

The root cause for this event was determined to be tripping of the traveling screens on thermal overload as a result of the traveling screens rapidly cycling between fast and slow speeds.

It should be noted that the debris experienced during this storm far exceeded that experienced during any other storm.

Corrective Actions

Short term corrective actions completed prior to reactor start up included operating the three CW pumps and determining the extent of screen fouling and the ability to clean the screens. Additionally, a Temporary Modification was installed to allow for continuous manual operation of the screens at either slow or fast speed. This eliminated the potential for the aforementioned cycling between fast and slow speed, and hence, the potential for tripping on thermal overload. North Atlantic will review this system and the Temporary Modification and will determine when and how it will be implemented as a permanent design change. It is anticipated that this review will be completed by April 30, 1993.

Other corrective actions included reviewing and revising procedure ON1017.02, "Circulating Water Screen Wash Operation," to reflect the Temporary Modification.

Additionally, the operation of removing debris from the fish counting house will be reviewed. During the period leading up to this event difficulty was experienced with the existing debris removal process. It is anticipated that this review will be completed by March 1, 1993,

Plant Conditions

This event took place while the plant was in Mode 1, Power Operation, at 100 percent power, with a Reactor Coolant System AB! temperature of 587 degrees Fahrenheit and a pressure of 2235 psig.

Previous Occurrences

This is the first event of this type at Seabrook Station.

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NYN- 93006

January 12, 1993

United States Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

References: Facility Operating License No. NPF-86, Docket No. 50-443

Subject: Licensee Event Report (LER) 92-025-00: Manual Reactor Trip
Due to Unavailability of Two Circulating Water System
Pumps

Gentlemen:

Enclosed please find Licensee Event Report (LER) No. 92-025-00 for
Seabrook Station. This submittal documents an event that occurred on
December 13, 1992. This event is being reported pursuant to 10 CFR
50.73(a)(2)(iv).

Very truly yours,

TCF:JES/jes Ted C. Feigenbaum
Enclosures: NRC Forms 366, 366A

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